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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,839	01/28/2002	Daisuke Shinomiya	FUJH 19.358	3652

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EXAMINER

ALI, SYED J

ART UNIT	PAPER NUMBER
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2195

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/058,839

Applicant(s)

SHINOMIYA, DAISUKE

Examiner

Syed J. Ali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 28 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date Jan. 28, 2002.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-15 are pending in this application.

Claim Objections

2. **Claims 1, 5, and 12 are objected to because of the following informalities:**
 - a. In line 8 of claim 8, “unit” should read “units”.
 - b. In line 8 of claim 8, “among a plurality” should read “among the plurality”.
 - c. In line 2 of claim 5, there should be a comma following “claim 2”.
 - d. In line 3 of claim 12, “from backup” should read “from said backup”.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

5. In lines 11-12 of claim 1, the claim recites, “each of the other equipment units functioning as a router is assigned as a backup router”. However, subsequently, line 14 of claim 1 indicates that an object is transmitted to “said backup router”. The first limitation indicates there may be multiple backup routers, while the latter indicates that there is only one backup

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router. Thus, the claim is indefinite for failing to point out which router is the claimed “backup router”. Claims 2-15 are rejected for similar reasons as claim 1, as they also discuss “the backup router” or “said backup router”.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 1-3, 5-6, 14-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Wils et al. (USPN 6,397,260) (hereinafter Wils).**

8. As per claim 1, Wils teaches the invention as claimed, including a dynamic load sharing system using a virtual router comprising:

a plurality of equipment units each functioning as a router which constitutes said virtual router having a single common address (col. 6 lines 32-35); and

an end system connected to a network through said virtual router (col. 6 lines 36-37),

wherein one of said equipment units among the plurality of equipment units functioning as a router constituting said virtual router is assigned as a master router, while each of the other equipment units functioning as a router is assigned as a backup router (col. 2 lines 4-9; col. 6

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lines 26-31, 47-62), and said assigned master router dynamically sets a packet condition for defining the routing object to transmit to said backup router (col. 6 lines 41-46, col. 6 line 64 - col. 7 line 1), so that routing processing between said network and said end system is performed by said plurality of equipment units each functioning as a router (col. 1 lines 15-18).

9. As per claim 2, Wils teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 1, wherein when said backup router receives from said master router the information of packet condition for defining the routing object, said backup router transmits a response message to said master router (col. 7 lines 14-18, 29-33).

10. As per claim 3, Wils teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 1, wherein after said master router notifies said backup router of said packet condition for defining the routing object, said master router removes said packet condition being allocated to said backup router from the packet condition for defining the routing object of said master router itself (col. 7 lines 18-25).

11. As per claim 5, Wils teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 2, wherein on reception of a response message packet from said backup router, said master router removes the allocated packet condition for defining the routing object, and notifies said backup router of a sequence number of

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the packet the routing processing for which is completed by said master router (col. 7 lines 14-18, 33-37).

12. As per claim 6, Wils teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 5, wherein said backup router discards a packet having been routed by said master router from among buffered packets based on said sequence number information transmitted from said master router, and performs routing processing from the succeeding packet to said discarded packet (col. 7 lines 14-18).

13. As per claim 14, Wils teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 1, wherein said dynamic load sharing system further comprises a server performing the functions of modifying packet information for routing and obtaining configuration information of said end system (col. 4 lines 1-8; col. 7 lines 8-10).

14. As per claim 15, Wils teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 1, wherein said network includes a carrier network providing an IP virtual private network service (IP-VPN service) or an ISP (Internet service provider) network (col. 8 lines 6-11).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. **Claims 4 and 7-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wils in view of Lamberton et al. (USPN 6,754,220) (hereinafter Lamberton).**

17. As per claim 4, Lamberton teaches the invention as claimed, including the dynamic load sharing using the virtual router according to claim 2, wherein after said backup router transmits said response message to said master router, said backup router is set to suspend routing processing for a predetermined period (col. 4 line 61 - col. 5 line 16).

18. It would have been obvious to one of ordinary skill in the art to combine Wils and Lamberton such that the outbound traffic in a network is sufficiently balanced across a group of routers evenly. Though the initial assignment of packets to routers may satisfy preliminary load balancing requirements, dynamically reassigning the routing conditions, e.g. based on processing load of each router, achieves a more robust method of preventing network congestion.

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19. As per claim 7, Lamberton teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 1, wherein said backup router includes a monitor means for monitoring flow rate information of the packets being routed by said backup router itself (col. 2 lines 54-61; col. 4 lines 20-25).

20. As per claim 8, Lamberton teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 7, wherein when said packet flow rate monitored by said monitor means exceeds a predetermined value, said backup router requests said master router to review said packet condition for defining the router object (col. 4 lines 35-37; col. 5 lines 41-44).

21. As per claim 9, Lamberton teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 7, wherein said master router collects said flow rate information monitored by said monitor means in said backup router, to review packet condition for defining the routing object when said packet flow rate exceeds a predetermined value (col. 5 lines 41-44).

22. As per claim 10, Lamberton teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 9, wherein said flow rate information collection from said backup router being performed by said master router is initiated by a request from said backup router (col. 5 lines 45-62).

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23. As per claim 11, Lamberton teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 9, wherein the reallocation of routers for routing packets is initiated by said packet condition review (col. 5 lines 32-62).

24. As per claim 12, Lamberton teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 11, wherein said review request from said backup router is inhibited for a predetermined period irrespective of said router reallocation for routing packets (col. 4 line 61 - col. 5 line 16).

25. As per claim 13, Lamberton teaches the invention as claimed, including the dynamic load sharing system using the virtual router according to claim 11, wherein said master router suspends said information collection for a predetermined period irrespective of said router reallocation for routing packets (col. 4 line 61 - col. 5 line 16; col. 5 lines 32-62).

Conclusion

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Each of the cited references are directed to very similar endeavors as that of the present invention. They seek to alleviate potential failures by providing redundancy among routers, especially through the use of Virtual Router Redundant Protocol (VRRP). This protocol improves upon prior art methods of routing, but has certain drawbacks with respect to load balancing capability. The cited references provide some insight into these solutions, but only

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discuss the problem generally. Wils and Lamberton provide a more detailed approach in dealing with dynamic load balancing in a network implementing a virtual router.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J. Ali whose telephone number is (571) 272-3769. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T. An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Syed Ali
August 2, 2005

MAJID BANANKHAH
PRIMARY EXAMINER

